# UNITED STATES PATENT AND TRADEMARK OFFICE

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 09/762,555 | 04/10/2001 | Lothrop Mittenthal | TET-1668/980 | 6718 |

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| 7590   01/12/2007<br>Robert A Muha<br>Kirkpatrick & Lockhart<br>Henry W Oliver Building<br>535 Smithfield Street<br>Pittsburgh, PA 15222-2312 | **EXAMINER**<br>LAFORGIA, CHRISTIAN A |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2131 | |

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|---|---|---|
| 3 MONTHS | 01/12/2007 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| Office Action Summary | Application No. | Applicant(s) |
| | 09/762,555 | MITTENTHAL, LOTHROP |
| | Examiner | Art Unit | |
| | Christian La Forgia | 2131 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE **3** MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) ☒ Responsive to communication(s) filed on <u>02 June 2006</u>.
2a) ☐ This action is **FINAL**.      2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) ☒ Claim(s) <u>1,2,4,7-10,12,13,16,17,20 and 21</u> is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) <u>1,2,4,7-10,12,13,16,17,20 and 21</u> is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a) ☐ All  b) ☐ Some * c) ☐ None of:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____.
      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

KAMBIZ ZAND
PRIMARY EXAMINER

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

1.      In view of the Appeal Brief filed on 02 June 2006, PROSECUTION IS HEREBY

REOPENED.  A new ground of rejection is set forth below.

2.   ·   To avoid abandonment of the application, appellant must exercise one of the following

two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37

CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an

appeal brief under 37 CFR 41.37.  The previously paid notice of appeal fee and appeal brief fee

can be applied to the new appeal.  If, however, the appeal fees set forth in 37 CFR 41.20 have

been increased since they were previously paid, then appellant must pay the difference between

the increased fees and the amount previously paid.

3.      A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing

below:


4.      Claims 1, 2, 4, 7-10, 12, 13, 16, 17, 20 and 21 have been presented for examination.

5.      Claims 3, 4, 11, 15, 18, and 22 have been cancelled as per Applicant's request.

### *Response to Arguments*

6.      Applicant's arguments, see page 17, filed 02 June 2006, with respect to independent

claims 1, 16, 20, and 21 have been fully considered and are persuasive.  The rejection of 1, 2, 4,

7-10, 12, 13, 16, 17, 20 and 21 has been withdrawn.

7.      See further rejections below.

### Claim Rejections - 35 USC § 101

8.      35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

9.      Claims 1, 2, 4, 7-10, 12, 13, 16, 17, 20, and 21 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims to processes that do nothing more than solve mathematical problems, manipulate abstract idea or concepts or signals representing any of the foregoing, the acts are not being applied to appropriate subject matter. Thus a process consisting solely of mathematical operations, i.e. converting one set of numbers into another set of numbers, does not manipulate appropriate subject matter and thus cannot constitute a statutory process. See MPEP § 2106.02, see also *Gottschalk v. Benson*, 409 U.S. 63, 71-72, 175 USPQ 673, 676 (1972). The claims of the instant invention are directed toward mathematically manipulating data to create a table to be used for encrypting, and while the claim recites a practical application, the method does not provide any limitations for performing the alleged practical application, thereby failing to produce a concrete and tangible result.

10.     Claims 16, 17, 20 and 21 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. As per claims 16, 17, 20 and 21, merely claimed as a computer-implemented method (i.e. claims 16 and 17) or instructions (i.e. claims 20 and 21) representing a computer listing *per se*, that is, descriptions or expressions of such a program and that is, descriptive material *per se*, non-functional descriptive material, and is not statutory because it is not a physical "thing" nor a statutory process, as there are not "acts" being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed aspects of the invention

which permit the computer program's functionality to be realized. Since a computer program is merely a set of instructions capable of being executed by a computer, the program itself is not a process, without the computer-readable medium needed to realize the computer program's functionality. In contrast, a claimed computer-readable medium encoded with a computer program defines structural and functional interrelationships between the computer program and the medium which permit the computer program's functionality to be realized, and is thus statutory. **Warmerdam**, 33 F.3d at 1361, 31 USPQ2d at 1760. **In re Sarkar**, 588 F.2d 1330, 1333, 200 USPQ 132, 137 (CCPA 1978). See MPEP § 2106(IV)(B)(1)(a). The Applicant has failed to define what a computer-readable medium comprises, and as such the Examiner has given the term its broadest reasonable interpretation in the context of the claims and has construed it to incorporate a communications link. The Office's current position is that claims involving signals encoded with functional descriptive material do not fall within any of the categories of patentable subject matter set forth in 35 U.S.C. § 101, and such claims are therefore ineligible for patent protection. *See* 1300 OG 142 (November 22, 2005) (in particular, see Annex IV(c)).

### *Claim Rejections - 35 USC § 112*

11.     The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12.     The term "maximal" in claims 1, 2, 4, 7-10, 12, 13, 16, 17, 20 and 21 is a relative term which renders the claim indefinite. The term "maximal" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. See

MPEP § 2173.05(b). See *Ex parte Caldwell*, 1906 C.D. 58 (Comm'r Pat. 1906). See *Ex parte Anderson*, 21 USPQ2d 1241 (Bd. Pat. App. & Inter. 1991).

### *Allowable Subject Matter*

13.     Claims 1, 2, 4, 7-10, 12, 13, 16, 17, 20 and 21 would be allowable if rewritten or amended to overcome the rejections under 35 U.S.C. 101 set forth in this Office action.

14.     The following is an examiner's statement of reasons for allowance:

As noted above, the Examiner agrees with the Applicant's argument on page 17, that neither reference discloses combining two linear, orthomorphisms to create a non-linear block substitution table.

15.     Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### *Conclusion*

16.     The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

17.     The following patents are cited to further show the state of the art with respect to s-box design, such as:

United States Patent No. 6,031,911 to Adams et al., which is cited to show practical s-box design.

United States Patent No. 7,079,651 to Deb Boer, which is cited to show merging of data in a non-linear manner.

United States Patent No. 5,796,837 to Kim et al., which is cited to show generating secure substitution boxes.

18.　Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christian La Forgia whose telephone number is (571) 272-3792. The examiner can normally be reached on Monday thru Thursday 7-5.

19.　If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz Sheikh can be reached on (571) 272-3795. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

20.　Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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